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Windows Vista is designed to help make you more productive, with new features including SuperFetch, ReadyBoost, and Hybrid Hard Drive. SuperFetch helps manage memory to get the most out of your computer's performance. ReadyBoost technology helps boost performance without adding RAM. Windows Vista also takes advantage of the hybrid hard drive technology to help improve battery life, performance, and reliability. With Windows Vista, your system is ready when you are.

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Sleep

Windows Vista introduces a new power state called Sleep. In Windows XP, when you shut down your PC, it takes a long time to turn back on. This is because the data you were working on must be saved to the hard disk. Windows Vista improves the speed of Sleep with the data protection feature and low power consumption of hibernation. Resuming use when your PC is in the Sleep state takes just a few seconds. You can shut down and resume use faster than ever before. Sleep is a hybrid state, a unique one-click on and off experience which not only reduces power consumption, but also helps protect your data.

Sleep on desktop PCs

Sleep is a different way on Windows Vista-based desktops than it is on laptop PCs. When you put a desktop computer into a Windows Vista-based hibernation, all the documents, applications, and data that are currently in use are saved in two places. First, they are saved to the memory, or RAM, where they are quickly accessible when you wake up. Simultaneously, the information is saved to the computer's hard disk (in Windows XP this was called hibernation). In Sleep, Windows Vista simultaneously saves the current user information to both memory and the hard disk.

In Sleep, Windows Vista saves the data saved to memory to help you return to work after extended periods of inactivity. Simply move the mouse or press any key on the keyboard, and the computer starts up within seconds.

The Sleep state uses the data saved to your hard disk to protect it in case of power loss. When you resume the use of your desktop after a power failure, Windows Vista will quickly restart from Sleep using the data saved to disk, with all of your data and applications intact.

Sleep on laptop PCs

On laptop PCs, you can enter the Sleep state by pressing the Power button or closing the screen lid. Your data is saved to memory, and the screen is turned off to save power and prevent damage. When you open the screen again, Windows Vista quickly wakes the computer after a short period of inactivity, after performing a fast boot-up, or even after lunch. Although too many carbohydrates might slow you down after lunch, your computer doesn't have to worry about what you eat. When you're not using your computer, background tasks—most applications have automatic backup and antivirus software—take this opportunity to run when they will least disturb you. These background tasks can take place in system memory that your applications were using. After you've closed your PC again, it can take some time to read all your data into memory, slowing down performance.

SuperFetch

SuperFetch, a new feature in Windows Vista, allows applications and files to load much faster than on Windows XP-based computers. In previous versions of Windows, system responsiveness could be uneven. You may have experienced dropped calls after a long video conference, after performing a fast boot-up, or even after lunch. Although too many carbohydrates might slow you down after lunch, your computer doesn't have to worry about what you eat. When you're not using your computer, background tasks—most applications have automatic backup and antivirus software—take this opportunity to run when they will least disturb you. These background tasks can take place in system memory that your applications were using. After you've closed your PC again, it can take some time to read all your data into memory, slowing down performance.

SuperFetch, a new technology in Windows Vista, understands which applications you use most, and loads those applications into memory, so you get system-wide response times when you first boot or when you switch to a different user profile. SuperFetch uses an intelligent prioritization scheme that understands which applications you use most often, and even distinguishes which applications you use at different times of day. For example, on the weekend versus during the week, so that your computer is ready to do what you want it to do. SuperFetch can also prioritize your applications over background tasks, so that when you return to your machine after leaving it idle, it's still responsive.

External memory devices

Adding system memory (RAM) is often the best way to improve your PC's performance. If you need more memory, you can add it or upgrade the memory in your computer. However, upgrading memory is not always easy. You must know what type of memory you need, purchase the memory, and open your computer to install the memory—which sometimes can invalidate your manufacturer's warranty. Also, sometimes the wrong memory modules interfere, preventing you from adding RAM even if you are willing to do so.

Windows Vista introduces a new concept in adding memory to a system. USB flash drives can be used as Windows ReadyBoost to extend system memory and improve performance when opening a file. Your computer is able to access memory from an Windows ReadyBoost device much faster than it can access data on the hard drive, boosting system performance. When combined with SuperFetch technology, this can help drive impressive improvements in system responsiveness.

Windows ReadyBoost technology is both reliable and secure. You can remove the Windows ReadyBoost device without losing any type of data or having to reboot the system. However, if you remove the Windows ReadyBoost, your performance returns to the level you experienced without the device. Data on the USB drive is not an issue, because of an advanced encryption method. A USB flash drive can store millions of files, so that a USB device can run as an Windows ReadyBoost for many years, even when heavily used. Finally, data on the Windows ReadyBoost is encrypted to help prevent inappropriate access to data when the device is removed.

Hybrid Hard Drive

A hybrid hard drive is a new type of hard drive with an integrated non-volatile flash memory buffer. If your machine is equipped with a hybrid hard drive, Windows Vista takes advantage of the hardware to boot, hibernate, and resume use more quickly. Hybrid Hard Drive technology can also improve system reliability and battery life.

The hybrid drive is intended for mobile PCs running Windows Vista. Your data is written to the flash memory, which saves work time and prevents data loss in the event of a power outage. The hybrid drive holds more data than a standard hard drive, so there is less chance that data can be restored from flash memory faster than from the mechanical hard drive. And since the mechanical hard drive is not used as much as a standard hard drive, the hybrid hard drive, which is slower than a standard hard drive, has the hard drive when you're on the move. Windows Vista takes advantage of hybrid hard drives to save battery life, resume use faster from hibernation, and improve reliability.

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Windows Backup

Windows Vista provides valuable new innovations to help ensure you never lose information that is important to you. Windows Vista offers multiple layers of backup and restore protection from hardware failure, user error, or other issues. These innovations include system restore enhancements, a new feature called Windows Backup, and a related feature: Volume Shadow Copy, which was first introduced with the Windows Server product family and is now available for PCs.

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System Restore

System Restore was introduced in Windows XP to allow people to restore their computers to a previous state without losing personal data files (for example, Microsoft Office Word documents, graphics files, and e-mail messages). You don't have to worry about taking system snapshots with System Restore—it automatically creates easily identifiable restore points, which you can use to revert your system to the way it was at a previous time. Restore points are created both at the time of significant system events (such as when you install applications or drivers) and periodically (each day). You can also create and name restore points at any time.

System Restore in Windows XP is based on a file filter that watches file changes for a certain set of file extensions, and copies files before they are overwritten. If you encounter a problem, you can roll back the system files and the registry to those from a previous date when the system was known to have worked properly.

In Windows Vista, System Restore allows recovery from a greater range of changes than in Windows XP. The file filter system for system restore used in previous versions of Windows is replaced with a new approach: Now, when a restore point is requested, a shadow copy of a file or folder is created. A shadow copy is essentially a previous version of the file or folder at a specific point. Windows Vista can request restore points automatically, or do so when you ask. When the system needs to be restored, files and settings are copied from the shadow copy to the live volume used by Windows Vista. This improves integration with other aspects of backup and recovery and makes System Restore even more usable.

Windows Backup

Windows Vista helps you easily back up PC settings, files, and applications when and where you choose, with the convenience of automated scheduling.

Windows Vista provides a backup experience that is more comprehensive and even easier to use than the basic backup utility included in Windows XP. The new Windows Backup feature gives you more choices for storing your backed-up information. You can choose to back up to CD-ROM, DVD-ROM, an external hard disk connected to your PC by USB or IEEE 1394, another hard disk on your PC, or to another PC or server connected to your network.

Windows Vista makes the backup process even easier than it is in Windows XP. You no longer have to remember to regularly back up your data. You can use a simple wizard to schedule when and where you want it backed up.

Of course, backup is only as useful as the recovery experience, which has been expanded in scope and usefulness in Windows Vista. A wizard helps you select the files or folders to restore and prompts you for restore media. Then it restores the files you selected.

Volume Shadow Copy

Have you ever accidentally saved over a file you were working on? Accidental file deletion or modification is a common cause of data loss. Windows Vista includes another useful innovation to help you protect your data: Volume Shadow Copy. Volume Shadow Copy automatically creates point-in-time copies of files as you work, so you can quickly and easily retrieve versions of a document you may have accidentally deleted.

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